5220 Detection September 25, 1972

Forest Insect Detection Survey (Aerial Reconnaissance)

The Record

An aerial detection survey of selected forest lands in Alaska was flown during the last week in July by Donald J. Curtis, Region 10 Entomologist, and John Wear, a remote sensing specialist stationed in Portland, Oregon. The survey craft, a Forest Service Cessna 180 on wheels, was flown by Wear from Region 6.

The aerial coverage amounting to approximately five million acres of forest land, included portions of the Glacier Bay National Monument and the Yakutat management unit in southeast Alaska; the Yakataga area, the Kenai Peninsula, the western edge of Cook Inlet from Chinitna Bay to the Theodore River, the lower Susitna Valley to Willow, the Matanuska Valley, and the Knik Arm-Knik River area in southcentral Alaska; and the Glennallen area from Eureka to Sourdough and the Copper River drainage from Copper Center to McCarthy in the Interior. Survey flights planned for the Mt. McKinley, Big Delta, Fairbanks, and the Forty Mile areas were cancelled because of rainy weather. The aerial surveys of the Tongass National Forest and the Prince William Sound portion of the Chugach National Forest were scheduled for a later date.

The survey costs, including aircraft rental and per diem for the pilot and entomologist, averaged $0.43 per thousand acres flown. Region 10 agreed to pay for the aircraft rental while on survey missions in Alaska and to finance John Wear's per diem during the time he was away from Portland.

The objectives of the survey were to determine the status of forest insect conditions on other Federal lands and State selection lands that had not been flown for several years and to monitor previously recorded infestations of spruce beetle on the Kenai Peninsula.

The results of this survey are as follows:

1. A spruce beetle outbreak was detected on State selection and Tyonek Indian Reservation lands on the west side of Cook Inlet which encompasses approximately six townships (200,000 acres) and extends from the McArthur River Delta northeast to the Beluga River.

The areas of heaviest mortality, resulting in almost total destruction of the white spruce stands on approximately 70,000 acres, occur along the Chakachatna River Delta and in the Straight, Nikolai, and Chuitkilnacha Creek drainages near Trading Bay and on portions of the Tyonek Indian Reservation between Congahbana Lake and the Chuitna River.

The cause of this infestation and the time at which it began is not definitely known. However, it is assumed that the extensive petroleum exploration in this area from 1965-1968, preceding the severe drought years of 1968-1969 in the Cook Inlet Basin, produced vast amounts of down material suitable for brood development. Presumably the large populations which developed in the right-of-way material emerged and attacked the extensive stands of drought weakened trees.

Past records indicate that most major outbreaks which have occurred in standing green trees resulted from the development of beetle populations accumulations of down material caused by natural catastrophies or relatively large-scale, man-related disturbances which have coincided with periods of drought.

The trend of this infestation is not definitely known. However, it is expected to continue until most suitable host material-trees 8" DBH or larger-within this area has been killed.

2. The spruce beetle populations on the northern half of the Kenai Peninsula are declining. Four years of outbreak has resulted in the destruction of most mature stands of white spruce. Active infestations still occur in the Swanson Lakes area and between Barabara and Phalarope Lakes but are declining as they deplete the available host material.

3. The most serious spruce beetle infestation now in progress on the Kenai Peninsula is occurring on State and private lands located south and west of Tustumena Lake between Clam Gulch and Stariski Creek. The number of red-top trees has increased ten-fold in this area since 1970, and tree killing is now in progress over approximately 60,000 acres.

A combination of favorable environmental factors, including an abundance of host material, large populations of over wintering beetles, and a continuation of drought, promises additional tree killing and an enlargement of this outbreak in 1973.

4. Spruce beetle activity was observed on 1,500-2,000 acres of Sitka spruce stands adjacent to several areas of 1967-1968 blowdown east of Mt. Iliamna on the southeastern shore of Cook Inlet.

This outbreak is expected to continue until a majority of the host type in this area has been killed.

5. A considerable amount of defoliation caused by winter drying was observed over approximately 60,000 acres of Sitka spruce located between the Doame and the Italio Rivers on the Yakutat portion of the Chatham Ranger District.

This damage appeared light to moderate except in the vicinity of Tanis Mesa where extremely heavy needle loss occurred over approximately 1,000 acres. This type of damage is not uncommon, but does not usually occur over such a large area.

The attached maps show in some detail the distribution of spruce beetle mortality and the locations of active infestations which were sketch mapped during this survey. Portions of the spruce beetle infestations marked with diagonal lines denote areas containing significant amounts of older dead.

The accompanying color prints provide visual evidence of the spruce beetle activity on the west side of Cook Inlet.

Donald J. Curtis

DONALD J. CURTIS
Entomologist

Enclosure

cc: RF
S&PF

DJCurtis:mm

COOK INLET BASIN BY OWNERSHIP CLASS

OWNERSHIP CLASS	TOTAL	BEETLE INFESTATION	OLDER MORTALITY
KENAI NATIONAL MOOSE REFUGE	49,800	103,300	46,500
BUREAU OF LAND MANAGEMENT	5,700	5,700	—
TYONEK INDIAN RESERVATION	12,000	12,000	—
STATE & PRIVATE	266,700	213,500	40,200
TOTAL	334,200	334,500	86,700

GROSS ACREAGES WERE DETERMINED FROM DOT GRID COMPUTATION OF SKETCH MAPPING DONE ON 1:250,000 SCALE QUAD. SHEETS.

ACCOUNTING FROM SPRUCE BEETLE OUTBREAKS IN THE COOK INLET BASIN *

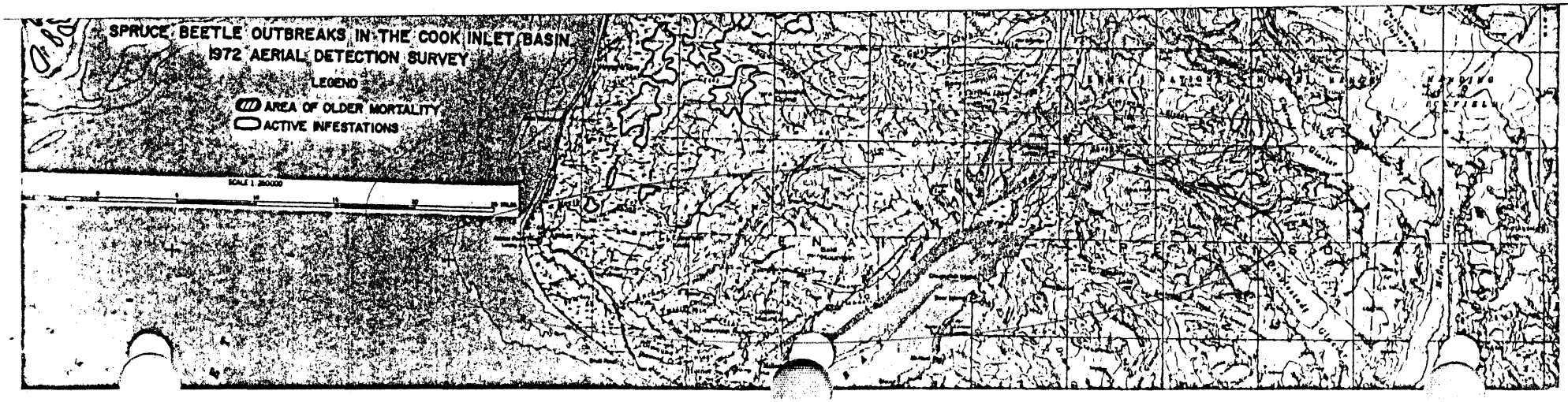
Volume of gross mortality by ownership

OWNERSHIP CLASS	VOLUME
KENAI NATIONAL MOOSE REFUGE	516,300,000
BUREAU OF LAND MANAGEMENT	35,000,000
TYONEK INDIAN RESERVATION	82,600,000
STATE & PRIVATE	1,081,500,000
TOTAL	1,715,300,000

* BOARD-FOOT TREE VOLUMES, SCRIBNER RULE, FOR WHITE SPRUCE, INTERIOR ALASKA - DEVELOPED BY WILBUR A. FARR, ASSOCIATE RESEARCH MENSURATIONIST, FORESTRY SCIENCES LABORATORY, JUNEAU, ALASKA

ASSUMPTIONS:

1. AVE. DIAMETER OF INF. TREE = 12" DBH
2. AVE. HEIGHT OF INF. TREE = 80'
3. AVE. NUMBER OF DEAD AND/OR INF. TREES / ACRE = 50
4. NECESSARY TO REDUCE ALL AVERAGES BY 20% BEFORE COMPUTING VOLUME/ACRE.


SPRUCE BEETLE OUTBREAKS IN THE COOK INLET BASIN
1972 AERIAL DETECTION SURVEY
LEGEND
AREA OF OLDER MORTALITY
ACTIVE INFESTATIONS
SCALE 1:250000